Daily Diary Report by Bid Item

Contract No.: **04-0120F4**

Diary #: **1086** **Const Calendar Day:** 659 **Date:** **25-Mar-2014** **Tuesday**
Inspector Name: **Brignano, Bob** **Title:** **Transportation Engineer**
Inspection Type:
Shift Hours: **Break:** **Over Time:**
Federal ID:
Location:
Reviewer: **Schmitt, Alex** **Approved Date:** **Status:** Submit

04-0120F4
04-SF-80-13.2/13.9
Self-Anchored
Suspension Bridge

Weather

Temperature **7 AM** **12 PM** **4PM**
Precipitation **Condition** cloudy am, showers start approx 1115

Working Day ☑ If no, explain:

Diary: Dispute ☐

General Comments

CCO 314, SAMPLING AND TESTING A354 GRADE BD MATERIAL:

ABF Engineer Kelvin Chen is working part time in the field and office on CCO 314.

On site today from VGO are Dave Van Dyke, Rob Rutledge, and Nick Buck. VGO arrives on site at 0700, take lunch 1200 to 1230, and leave the site at 1530, but they continue working after leaving the site because they need to buy some supplies for the work.

VGO's priority activity today is to finish connecting the strain gauges at the test rigs to the wire runs that lead to the eDAQ data logger. By the end yesterday, they were done with the TR 13 connections and about half done with the TR 12 connections. This morning, VGO finishes the connections at TR 12 by approximately 0830. VGO is also present during the ABF (ironworker and operator) moving of the jacking rods in the test rigs to ensure that their wire runs are not caught up or damaged. VGO also attaches the ambient air thermocouple to the eDAQ datalogger – this is just attached so that it can be checked (check connection, check reasonableness of the reading), but it will not be in its final position until after the tents are placed above the test rigs in one of ABF's final setup steps. There is also work on the program to collect the data, add the calculated channels, and produce plots for the two times a day reports.

Crews at the Pier 7 warehouse area are working an 8-hour shift 0700 through 1530 today, with the work of one ironworker and one operator on CCO 314 for portions of the day. Ironworker Jared Garret works all day on CCO 314. Operator John Sabatino work portions of today at the test rig area on CCO 314.

With the completion of painting of the jacking rods and couplers for TR's 12 and 13 on Monday 3/24/2014, the paint is now dry and the jacking rods can be moved to their final positions. The rods had previously been installed in the test rigs temporarily sticking out to the south for access for CCC to paint the portions of the rod and coupler that will be in the wet chamber.

The first activity by ABF at TR's 12 and 13 is to install the test rod at TR 12. This test rod was not installed previously because no portions of it had to be painted by CCC. Thread sealant (Rector Seal 5) is applied to the rod, and then the rod is threaded into the coupler. The full per plan 6" of engagement is achieved. Measurements are also taken to ensure that the 3" diameter rod is engaged the correct amount with the coupler and is not threaded into the coupler too far – the 4" diameter jacking rod in the other half of the coupler was 7/8" short of the per plan engagement so there is a void space in the center of the coupler that could permit the test rod to be threaded too far, leaving less material for the stickout beyond the test nut. Lots of thread sealant is put on the jacking rod to ensure full coverage, and as a result, excess material is pushed out during threading. The excess material is cleaned – wipe away excess and then use brake

cleaner with rages for the final portions. The installation of the TR 12 test rod is complete about 0730.

At about 0745, after some setup, ABF starts to move the TR 13 rod into the test rig using the extendable forklift. First, timber blocking temporarily put in the wet chamber to support the rod is removed. Multiple steps involving moving the rod and re-supporting the rod are needed. Previously, the jacking beam was placed on the stainless steel slide plate in anticipation of inserting the jacking rod through the holes in the center of the jacking beam. However, the jacking rod position during this operation is not precise and it just hits the jacking beam (misses the first hole in the jacking beam). The plan is changed and the jacking beam is moved out of the way to allow the jacking rod to be put in its correct position in the test rig with the proper extension out of the north end for the later installation of the jacking beam. The TR 13 jacking rod is in its correct position at about 0810. The coupler is about 1" (25mm) from the end of the test rig, which is a little more than the 20mm per plan, but this dimension is also acceptable, resulting in slightly less stickout and more of the test rod in the wet chamber. The coupler is supported by a neoprene stack in the wet chamber. The test rod exits the test rig with upper and lower dimensions being different by about 3/8", which means it is off center by about 3/16" (it is high). This is a small offset and works with the hole diameter in the end plate. The rod rotated slightly during installation, so it is "clocked" to make the strain gauges in the correct position (so that the top strain gauges are at the top).

The next operation at TR 13 is attaching the bellows/flashing to the diaphragm. First the bellows/flashing is dry fit without caulking against the diaphragm. The 4 screws make the holes in the washer reinforcing plate, the bellows/flashing flange, and the drill and tap holes in the diaphragm, but the aligning of the plies is tight. Tightening the 2 upper screws through the handhole is reasonable, but tightening the 2 lower screws through the handhole and with limited room between the rod and the test rig sides is very difficult. After the test fit, a bead of caulk (Loctite 598 High Performance RTV Silicone Gasket Maker, product approved by the DJV for use in the wet chamber) is applied between the bellows/flashing flange and the diaphragm plate with the drill and tap holes. Then, the screws are tightened. This second fitup with the caulking between 2 plies is more difficult, but eventually the screws are tightened. Then, more caulking is added around the circumference of the washer reinforcing plate and the round diaphragm plate with the drill and tap holes – the space between these 2 steel plates with the flange of the bellows/flashing is covered by caulk (Loctite 598 High Performance RTV Silicone Gasket Maker). This work is complete about 0930.

At about 0945, after some setup, ABF starts to move the TR 12 rod into the test rig using the extendable forklift. First, the jacking beam is moved out of the way. There was no blocking in the wet chamber of this test rig, so that is one step from the work at TR 13 that is skipped at TR 12. The TR 12 jacking rod is shifted to its correct position in the test rig by 1000. The coupler is about 1" (25mm) from the end of the test rig, which is a little more than the 20mm per plan, but this dimension is also acceptable, resulting in slightly less stickout and more of the test rod in the wet chamber. The coupler is supported by a neoprene stack in the wet chamber. The test rod exits the test rig with upper and lower dimensions being different by about 3/8", which means it is off center by about 3/16" (it is high). This is a small offset and works with the hole diameter in the end plate. The rod rotated slightly during installation, so it is "clocked" to make the strain gauges in the correct position (so that the top strain gauges are at the top).

After the morning break, the TR 12 and TR 13 washers and nut are repositioned on the jacking rod against the test rig (at north end plate) – the jacking rods have been shifted approximately 2' north, so the nuts need to be turned down the jacking rods to their new positions. This is to secure the jacking rod in the correct position in at least one direction of movement.

Starting about 1030, work starts on the TR 12 bellows/flashing at the diaphragm. First the bellows/flashing is dry fit without caulking against the diaphragm. The 4 screws do not make all the holes in the washer reinforcing plate, the bellows/flashing flange, and the drill and tap holes in the diaphragm. Note that working with Philips Head screws was difficult at TR 13, so when VGO went to a hardware store this morning to purchase some materials needed for their work, they also bought for ABF some hex head screws with the same threads – these will be easier to tighten with a socket instead of a screwdriver. Because of the slight misalignment of some holes in these 3 plies and given the difficulty making the screws fit at TR 13, the holes in the flashing are to be enlarged. At about 1100, when drilling out the first

hole in the bellows/flashing flange, the drill shifts/slips and punches a hole in another part of the bellows/flashing. Replacing the bellows/flashing with a spare would take a very long time, since the damaged bellows/flashing is located between the installed strain gauges and the installed coupler – everything at TR 12 would need to be taken apart. Several ideas to patch the hole in the bellows/flashing are discussed and will be tried later.

From CT-METS, Scott Croff and Elijah Turner are present between 1030 and 1100 to install the AE sensors on the couplers at TR's 12 and 13. They use sandpaper to remove the epoxy paint in the footprint of the coupler and use a 2-part epoxy (Loctite E-20NS) to bond the sensor to the steel coupler. The sensor is temporarily held in place with a large rubber band. The wire is not run out of one of the holes in the top of the wet chamber today and is just bundled inside the wet chamber for now.

Also today, we get some mixed touchup paint from CCC (epoxy paint - Carboguard 890). This is used to touchup a chip in the paint on the TR 12 coupler, some new damage inside the TR 12 wet chamber, and inside the holes in the top of the TR's 12 and 13 wet chambers – before this touchup, this is the original paint from TR's 10 and 11, which ended with some minor wear and damage in these holes.

At about 1115, rain showers start, so the test rigs are covered with tarps and tools are put away. Between 1115 and 1200, there is not much work other than moving tools/materials to deal with the rain showers. The rain showers stop during lunch, so after lunch, work resumes at TR 12. This work is another dry test fit of the bellows, but without the washer plate this time, to check the alignment of the holes. The holes in the bellows are not perfectly aligned with the drill and tap holes in the diaphragm, and this will be addressed later.

At about 1300, the caulking is added at the TR 12 interface between the coupler and the test rod (that was installed this morning).

Then, just after 1300, work starts on the erection of the TR 12 jacking beam. It is placed on the stainless steel slide plate without adjustment of the previously placed shims under the plate. It is pushed towards the test rig with the jacking rod through the holes in the jacking beam. This installation is not complete, because the shims under the stainless steel plate need to be adjusted.

Then, at about 1330, work starts on the erection of the TR 13 jacking beam. It is placed on the stainless steel slide plate without adjustment of the previously placed shims under the plate. It is pushed towards the test rig with the jacking rod through the holes in the jacking beam. Note that during this installation, rain showers start again, and the ironworker works through the rain on this jacking beam installation. After the jacking beam is in place, the position of the jacking rod in the holes of the jacking beam is noted and the shims under the stainless steel slide plate are adjusted. This installation is not completed today, and the shims under the stainless steel plate need additional adjustment. Tools are put away for the end of the shift, and the test rigs are covered with tarps because of the rain. The end of the shift is 1530.

In the afternoon, I also attempt several different methods for patching holes in spare pieces of the bellows/flashing. The first test is with caulk (Loctite 598 High Performance RTV Silicone Gasket Maker), which is simply placed on a piece of the bellows/flashing red silicone product to check the adherence/bond – it appears to bond well and flexes with the bellows/flashing after drying (not full cure yet). The next test is using the caulk (Loctite 598 High Performance RTV Silicone Gasket Maker) to glue a piece of the red silicone product to a larger piece of the red silicone product, which also appears to bond well, and the added piece flexes with the larger piece. Another method is also tested by plugging a hole in a spare piece of the bellows/flashing with Adeka KM String. This also involves tying a knot in the string on either side of the sheet of material to secure it. The Adeka KM String procured previously by ABF on CCO 314 is 4mm diameter, so I also obtain a sample piece of 6mm diameter Adeka KM String from the DJV for another test that should work better since it more closely matches the diameter of the hole in the TR 12 bellows/flashing. The samples with Adeka KM String (4mm and 6mm) through the holes as plugs are put in a jar of water to examine the performance when the Adeka KM String expands in water over the next few days. I also test 2 different bicycle tire patch products, but those products intended for rubber tires do not adhere/bond to the red silicone product that is used for the bellows/flashing.

A generator – Whisperwatt 7000 – ABF ID 002343 is used part of the day. An oxyacetylene torch is on idle/standby at the work area. A compressor – IR P185R ABF ID 002078 is on idle/standby at the work area for most of the day and is used briefly. A Hyster 155 forklift is used for part of the day. An extendable forklift is used for part of the day. A Kubota Cart is used for part of the day.

Note that there is k-rail at this work area. Some of the k-rail is rented and addressed by the rental agreement. Some of the k-rail is ABF's k-rail used on site and paid as rented from ABF on a daily basis. To elevate the k-rail, crane mats and timber blocking (12x12's) are in use. The k-rail quantities are as follows:
10' bought k-rail = 20 pieces
10' ABF k-rail = 4 pieces
20' rented k-rail = 16 pieces
20' ABF k-rail = 19 pieces
Note that this includes three 20' ABF k-rail between the CCO 314 work area and FW Spencer's yard, with that k-rail being in place prior to the CCO work and not related to CCO 314.

The agreed extra work with ABF is as follows:
Engineer Kelvin Chen - 8 hrs
Ironworker Jared Garrett - 8 hrs
Operator John Sabatino - 2.5 hrs
Radios (2 radios) - 10.5 hrs
Extendable forklift - 2.5 hrs
Hyster 155 forklift - 4 hrs
185 CFM Compressor - 1 hr
Impact gun - 1 hr
110 kW Generator - 3 hr
k-rail: 16 pcs @20' and 4 pcs @10'
Crane Mats (12x12 - 5'x16') - 4 pcs
Crane Mats (12x12 - 5'x7') - 2 pcs
Crane Mats (12x12 - 5'x8') - 11 pcs
See the attached Extra Work Order - Signed with ABF for CCO 314 work

INSPECTOR OT REMARK:

Office and Field 2 hours: After end of ABF's shift, I continue testing methods for repair of the hole in the bellows/flashing at TR 12. I also discuss this and other issues with the DJV, address issues with CT-METS (lab testing plans), and issues with ABF (DJV request for additional steps to be implemented in VGO's procedure for the pH checks). ABF's shift is 0700 to 1530. My shift is 0700 to 1730 and my OT hours are 1530 to 1730.